# Ocean Engineering Technical Data Sheet

## AVC Adjustment for Low-Current Lamps in a VRB-25

When using either a 1.9A, 2.03A, 35-Watt, 3A, or 3.05A lamp for the main light instead of the standard 110-Watt lamp shown in standard drawing 130425 in a 120VAC, CAT I - I I I AVC/Navaid Sensor/VRB-25 Lighthouse System, the Main Light lamp current sensing circuit must be modified to ensure it can correctly detect when the lamp has failed. In this configuration the 120VAC feeder at 2TB2-1 & -2 ("MAIN LIGHT") powers the Hi-Watt AtoN Power Supply, which then powers the 12VDC main light lamp and the 12VDC main light motor. Use the following procedure to make the necessary change to the AVC:

INSTALLATION:

1. Secure power to the AVC. Open the AVC door, tilt down the main panel and swing back the upper protective cover to access the current detector labeled "1CD1". Confirm that 1CD1 is a NEILSEN-KULJIAN (N-K) Model **D150-2A** current-operated switch.

2. Disconnect the main light circuit (en route to 2TB2-1, "MAIN LIGHT") at the terminal 1E2; loop the conductor through the center hole of 1CD1 again, resulting in a total of ***two*** passes through the current sensing "donut."

3. Remove and discard the "RANGE" jumper near the base of 1CD1.

4. AVC connections to 1CD1 should be made between the "COM" and "2" terminals; although, connections between "COM" and "1" terminals will also work provided trim-pot "1" is adjusted (as described next).

5. Using a small screwdriver, adjust the 4-turn pot labeled "TRIP AMPS" at 1CD1-2 in the "-" direction to max clockwise (i.e., turn the trim-pot screw located directly beneath terminal "2" in the clockwise direction for at least 5 or 6 complete revolutions to ensure you have swept across to "-" max). This sets 1CD1's current threshold to about one (1) amp ac.

SYSTEM TEST:

Once the system has been hooked up, the following test procedure will confirm proper current detector operation:

1. Advance the lampchanger in the VRB-25 main light to the 5$^{th}$ position and ensure a good 1.9A lamp is in place there and that nothing is installed in position six (6).

2. Turn on power and ensure the main light turns on and the VRB-25 rotates (main light and motor runs 24 hours a day). The system should continue to

operate normally without switching over to emergency light even after three minutes.

3. Carefully reach into the VRB-25 housing and remove the lamp from the 5th position with a rag (be careful, the lamp may be hot!). The flasher will automatically advance the lampchanger to the vacant sixth and final position.

4. Confirm that the AVC/Navaid Sensor system secures power to the main light and activates the emergency light after about two minutes.

Background Discussion:

The parasitic AC current drain of the power supply, with no loads connected, is about 136mA ac. However, in a worst case scenario in which the last lamp has burned out and only the combined **100mA** dc **motor** current, parasitic **20mA** dc **flasher** current, and **214mA** dc lampchanger sixth position **resistor** current drain remains, the resulting 120VAC current into the power supply jumps to about **375mA ac**. Measured AC current drain with a 1.9A lamp connected and turned on is about 750mA ac. Two passes (one loop) through the 1CD1 will be seen as about 1.5A ac current by the current detector when the lamp is on. This ac current level is safely above the newly set one (1) amp ac threshold and therefore not detected as a failure by the NAVAID Sensor. However, when the sixth-position lamp burns out (worst case scenario), the resulting 0.75A ac current (twice the 375mA ac current as mentioned above), is now below the one (1) amp ac threshold and considered a main light failure. This will prompt the AVC/NAVAID Sensor to post a main light failure and turn on the emergency light.

**For further information or assistance, the G-SEC-2A Signal and Power Team POC is Mr. Kam Agi, 202-267-1872, kagi@comdt.uscg.mil**